

WHAT IS CLAIMED IS:

1 1. A data transmission system operable for transmitting packet data from an  
2 Internet Protocol (IP) host over an IP network comprising:

3 an IP layer;

4 a network layer coupled to the IP network, wherein said IP host is coupled to  
5 said IP network via a layer 2 network, said layer 2 network interfacing said IP  
6 network with a set of routers; and

7 a Multiple Address Resolution Protocol (MARP) layer, said MARP layer  
8 between said IP layer and said network layer, said MARP layer operable for  
9 selecting one router of said set of routers in response to a next hop IP address  
10 provided by said IP layer to said MARP layer when a packet of data is to be  
11 transmitted from said IP host over said IP network.

1 2. The data transmission system according to claim 1, wherein said IP host is  
2 provided with an Address Resolution Protocol (ARP), said ARP operable to convert  
3 any IP address into a network address of a router to be used in said layer 2 network  
4 by mapping said IP address, in an ARP table into a network address of an active  
5 router selected from said set of routers.

1 3. The data transmission system according to claim 2, wherein said MARP layer  
2 includes, a MARP table mapping said next hop IP address into a list of IP addresses  
3 of routers, said router addresses indicating routers selectable from said set of  
4 candidate routers, said IP addresses of said routers being mapped in said ARP table  
5 indicating active candidate routers able to be used as routers for transmitting said  
6 packet of data from said IP host to one or more of said workstations via said IP  
7 network.

1 4. The data transmission system according to claim 3, where in one of said  
2 routers is selected amongst said active candidate routers by using hash coding  
3 techniques based upon destination IP addresses, a pair of source destination ports in  
4 said packet of data to be transmitted, and said active candidate router IP addresses.

1 5. A method of selecting a router by an IP host in a data transmission system  
2 transmitting packetized data from said IP host having at least an IP layer and a  
3 network layer to a plurality of workstations by an intermediary of an IP network, and  
4 wherein said IP host is coupled to said IP network via a layer 2 network interfacing  
5 said IP network by a set of routers, said method comprising the steps of:

6 determining a list of candidate routers from said set of routers;

7 determining a list of active candidate routers from said list of candidate  
8 routers, said list of active candidate routers determined before selecting, from  
9 said set of routers, said router to be used for transmitting said packetized data;  
10 and

11 selecting said router to be used for transmitting said packetized data from said  
12 the list of active candidate routers.

1 6. The method according to claim 5, wherein said step of determining said list of  
2 active candidate router IP addresses is performed by a Multiple Address Resolution  
3 Protocol (MARF) layer between said IP layer and said network layer of said IP host.

1 7. The method according to claim 6, wherein said step of determining said list of  
2 candidate routers is performed by said MARF layer by a look up in a MARF table  
3 using a next hop IP address as an entry.



1 9. A computer program product embodied in a machine readable medium,  
2 including programming for selecting a router by an IP host in a data transmission  
3 system transmitting packetized data from said IP host having at least an IP layer and a  
4 network layer to a plurality of workstations by an intermediary of an IP network, and  
5 wherein said IP host is coupled to said IP network via a layer 2 network interfacing  
6 said IP network by a set of routers comprising a program of instructions for  
7 performing the steps of:

8 determining a list of candidate routers from said set of routers;

9 determining a list of active candidate routers from said list of candidate  
10 routers, said list of active candidate routers determined before selecting, from  
11 said set of routers, said router to be used for transmitting said packetized data;  
12 and

13 selecting said router to be used for transmitting said packetized data from said  
14 the list of active candidate routers.

1 10. The computer program product according to claim 9, wherein said step of  
2 determining said list of active candidate router IP addresses is performed by a  
3 Multiple Address Resolution Protocol (MARP) layer between said IP layer and said  
4 network layer of said IP host.





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transmitted from said IP host over said IP network.

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14. The IP network according to claim 13, wherein said IP host is provided with an Address Resolution Protocol (ARP), said ARP operable to convert any IP address into a network address of a router to be used in said layer 2 network by mapping said IP address, in an ARP table into a network address of an active router selected from said set of routers.

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15. The IP network according to claim 14, wherein said MARP layer includes, a MARP table mapping said next hop IP address into a list of IP addresses of routers, said router addresses indicating routers selectable from said set of candidate routers, said IP addresses of said routers being mapped in said ARP table indicating active candidate routers able to be used as routers for transmitting said packet of data from said IP host to one or more of said workstations via said IP network.

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16. The IP network according to claim 15, where in one of said routers is selected amongst said active candidate routers by using hash coding techniques based upon destination IP addresses, a pair of source destination ports in said packet of data to be transmitted, and said active candidate router IP addresses.

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